

CLAIMS

What is claimed is:

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1. A method for detecting the presence of metastatic cells in a cell population comprising the steps of  
lysing at least a portion of the cell population,  
incubating the lysed cells with a reagent capable of specific binding to  
an epitope of EphA2 to allow antibody binding to said epitope, and  
detecting compound-epitope binding.
  2. The method of claim 1 wherein the reagent is an antibody.
  - 10 3. The method of claim 2 wherein the epitope of EphA2 is an intracellular epitope of EphA2.
  4. The method of claim 3 wherein the antibody is produced by hybridoma cell line D7.
  5. The method of claim 2 wherein the antibody is labeled with a  
15 detectable label, and the detecting step includes detecting the label.
  6. The method of claim 5 wherein the antibody is labeled with a fluorescent label and the detecting step comprises detecting the fluorescent label.
  7. The method of claim 5 wherein the antibody is labeled with a radioactive label and the detecting step comprises detecting the radioactive label.
  - 20 8. The method of claim 1 wherein the cell population comprises cells from a breast or prostate tissue biopsy.
  9. The method of claim 1 wherein the cell population is harvested from a body fluid selected from the group consisting of blood, plasma, spinal fluid, saliva, and urine.
  - 25 10. The method of claim 9 wherein the detecting step includes a diagnostic method selected from the group consisting of ELISA assays and flow cytometry.
  11. The method of claim 1 wherein the incubating and detecting steps comprise western blotting methodology.
  - 30 12. The method of claim 11 further comprising the steps of providing a second antibody having phosphotyrosine specificity, and western blotting with the second antibody.

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13. The method of claim 1 wherein the metastatic cells are selected from the group consisting of breast, prostate, lung, and colon cancers.

14. A method of producing an antibody which specifically binds to an intracellular epitope of EphA2 comprising the steps of  
injecting tyrosine phosphorylated proteins into lymph nodes of a mammal,

harvesting lymph node cells from the mammal,  
fusing lymph node cells with myeloma cells to form hybridomas,  
selecting at least one hybridoma producing an antibody which binds to  
10 the intracellular epitope of EphA2,  
isolating the antibody.

15. The method of claim 14 wherein the antibody recognizes an antigen also recognized by the monoclonal antibody D7.

16. The method of claim 14 wherein the tyrosine phosphorylated  
15 proteins are EphA2.

17. The antibody produced by the method of claim 14.

18. An antibody which specifically binds to an intracellular epitope  
of EphA2.

19. The antibody of claim 18 bound to a detectable labeled.

20. The antibody of claim 19 which is produced by hybridoma cell  
20 line D7.

21. A method for detecting the presence of metastatic cells in a cell population comprising the steps of

incubating the cells with a reagent capable of specific binding to a  
25 compound associated with EphA2 expression, and  
detecting reagent-compound binding.

22. The method of claim 21 wherein the reagent is an antibody.

23. The method of claim 21 wherein the compound is selected from the group consisting of EphA2, a fragment of EphA2, DNA coding for the EphA2 protein, and RNA coding for the EphA2 protein.  
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24. The method of claim 21 further comprising the step of fixing the cells on a slide, and the detecting step comprises immunofluorescence staining.

25. A kit for detecting the presence of metastatic cells in a cell population comprising  
an antibody capable of specific binding to an epitope of EphA2, and  
means for detecting antibody-epitope binding.

5 26. The kit of claim 25 wherein the means for detecting antibody-epitope binding is a label bound to the antibody.

27. The kit of claim 25 further comprising an antibody having phosphotyrosine specificity.

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